"PAY STATION SERVICES"

CONTENTS

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ILLUSTRATIVE EXAMPLE

1. GENERAL

1.1 This section provides REA Borrowers, consulting engineers, and other interested parties with information for use in the design, construction and operation of REA Borrowers' telephone systems. More specifically, this section discusses the various types of pay station service offerings including general operation, associated central office equipment requirements, pay station loop limitations, engineering and economic factors having to do with the selection of the mode of operation of pay station service. The pay station services and features discussed in this section are those normally available from unattended step-by-step and common control offices. Most common control offices require some type of pay station adaptors for proper operation. Additional information may be required in order to adapt this material to other types of central office and pay station equipment.

1.2 This section replaces Section 703, Issue No. 2, dated May 1969, and Section 702, Issue No. 3, dated June 1956. The principal changes include: (1) Revised data on typical outside plant loop limits for pay station services; (2) clarification of information describing the types of pay station services; (3) removal of information on local prepay; (4) additional information on coin-free services; (5) changes to the preferred series of number assignments for pay station lines; (6) incorporation of information on booths and special fittings into a section; and (7) a general review and updating of information included in the previous issue.

2. INTRODUCTION

2.1 Pay Station Methods: There are two basic methods of providing pay station service from unattended step-by-step and common control type central offices. They are:

a. Semipostpay
b. Prepay

1. Conventional type
2. Line number type

2.2 Pay Station Service Modes: Pay station facilities may be provided as a public or semipublic service. The type of service will depend upon the amount of local and toll revenue anticipated, the proposed location of the pay station, the type of subscribers to be served, and the general user reaction. Greater details concerning the economic feasibility of providing pay station services may be found in Section 1520 of the REA Telephone Operations Manual. For the purpose of this section public and semipublic pay station services are defined as follows:

2.21 Public Pay Station Service is an exchange service providing local and toll service to the general public. The telephone system has no minimum revenue guarantee from the subscriber upon whose premises the station may be installed. The revenue from such stations is totally dependent upon local and toll revenues collected from the public at large.

2.22 Semipublic Pay Station Service is designed for a combination of general public and local telephone customer utilization. Locations may be at community stores, service stations, taverns, etc., where the proprietor may use the station as a business telephone; but yet it is available to the general public. Minimum monthly revenue guarantees are appropriate for this class of service. The minimum rate guarantee may vary depending upon tariff schedules. It is usually based upon a daily rate or a monthly charge equivalent to the one-party business rate applicable to the exchange area.

3. SELECTION OF AND TYPES OF PAY STATION SERVICE

3.1 Mode of Operation: The selection of a pay station system; that is, the mode of operation (semipostpay, or prepay) which will satisfy service requirements under a particular set of circumstances may be influenced by many operations, economic and public relation factors. The most common of these are:

(a) Total number of pay stations required.

(b) Estimated revenue (local and toll) to be derived from pay station service.

(c) The anticipated type and volume of traffic; i.e., local and/or toll from pay stations.

(d) Public relations aspects; i.e., user reaction to the type and grade of service offered.

(e) The type and quality of interoffice facilities between pay stations and their attendant toll center.

(f) Additional plant investments which may become necessary at future dates to upgrade pay station services.

(g) Future requirements for the establishment of coin-free services; i.e., operator assistance, NPA information, etc.

A synopsis of each method for providing pay station service is given below. The purpose is to highlight the operating features of each method and to provide additional insight into the economic considerations applicable to each method.

3.2 Prepay: This type is the most sophisticated of pay station service and is recommended by REA. It provides local and toll prepay service with operator supervision of coin collect and return functions during toll calls. Due to the costs normally involved for additional central office equipment, such as segregated trunk groups, this type of pay station service is more prevalent in the larger urban and metropolitan areas, however, it is expanding to rural areas. There are two basic methods of providing prepay pay station service and various options for each of these depend upon the specific application. The two basic methods are: (1) The "Conventional Type" and (2) the "Line Number Type". The number of prepay pay stations required and the type and volume of traffic anticipated usually determine the applicable method and option for providing this service commensurate with economic and operational requirements. Due to the complexity of the control of coin collect and refund operations for prepay service, the basic methods of providing prepay service and the features of each are outlined in greater detail in subsequent paragraphs of this section. Table 1 includes central office equipment tabulations for prepay service, while Figure 2 and 3 reflect typical central office equipment configurations for several applications. Prepay pay station operation for local and toll inward and outward traffic is outlined in Paragraph 3.21 through 3.24.

3.21 On outward local calls a coin deposit is required before dialing. A wiring option is usually available at the pay station adapter (or repeater) which provides a dial tone at the pay station either before or after coin deposit (See Paragraph 6). Coins are stored temporarily in a coin hopper to be either returned or collected by the coin receptacle box. When the called party answers, reverse battery returned from the connector conditions the prepay pay station adapter for the collect function. If a call is incomplete, abandoned, or to a telephone service number, the adapter becomes conditioned for the return function. The +110V dc for the collect function, and the -110V dc for the refund function are supplied by the pay station adapter and are applied for a short duration of time. They are pulsed at 50 PPM until the coins deposited in the coin hopper have been collected or refunded. If the coins do not clear the hopper within a predetermined time interval, the pay station adapter will go into an alarm condition. Collect and refund operations are performed after the pay station is returned to the "on hook" condition.

3.22 Inward local calls made to the prepay pay station are coin free and are handled by the coin connectors in much the same manner as calls to regular subscribers are accommodated by local connectors.

3.23 On outward toll calls after dialing the operator code and seizure of a CLR trunk is accomplished, -110V dc is returned to the pay station from the CLR trunk circuit to return the original coin deposit. When the operator

answers the call, reverse battery is supplied from the CLR trunk circuit to condition the pay station adapter (repeater) for the collect function. A momentary tone will notify the operator that the call is originating from a pay station. The operator may request the coin deposit which will be stored in the hopper for ultimate collection or refund. At the end of a call when the pay station has been restored to "on hook" and the circuit is released by the operator, the pay station adapter (repeater) will automatically actuate the coin collect mechanism in the pay station. The operator may also exercise direct coin control through the use of her position coin collect-return key at any time during the call. Overtime charges are handled in the same manner as for semipostpay service.

3.24 Incoming toll calls to the prepay station are identified by the operator by the telephone number assignment. On collect calls, the operator requests the necessary coin deposit before permitting conversation to begin. Coin collect-return control can be performed by the operator, or the coin connector will automatically supply ±110V dc to the station for coin collection after the station is "on hook" and the operator has released the circuit.

3.3 Semipostpay Pay Station Service: This type of service is used extensively throughout the independent telephone industry, especially in rural telephone systems where it provides a useful service at substantial savings. However, the contrast between semipostpay and prepay modes of operation is becoming a problem of considerable magnitude in view of user reaction. The major objection is the loss of coins by users accustomed to metropolitan prepay service. With the increasing degree of mobility of people, it is anticipated that this problem will become even more acute, and may force conversion to prepay.

3.31 Dial Semipostpay pay station service requires a coin deposit after the called party has answered in order to begin two-way conversation. On special service calls; such as toll operator, repair service, information, etc., two-way conversation may be established without coin deposit. Toll calls are accommodated on a manual postpay basis. Semipostpay service was developed as a means of providing the most economical dial pay station service from dial central offices. With the exception of pay station tone identifiers, which are required to identify semipostpay stations to the toll operator, no special central office equipment is required to provide this type of service. Semipostpay telephones may be assigned to any tone-equipped line equipment in the central office. Appropriate considerations should be allowed for the introduction of "911" emergency calling. (See Paragraph 4.411). A tabulation of central office equipment necessary to implement semipostpay service is included in Table 1. Figure 1 shows local and toll, inward and outward traffic via a semipostpay telephone which is accomplished as described later.

3.32 Dial tone is provided as soon as the loop is closed by the hook switch. Local outward calls are accomplished by simply dialing the desired number, waiting until the called party has answered, and then depositing the coin(s) to establish two-way conversation. The prevention of two-way conversation until the proper coin(s) has been deposited, is accomplished by shunting the

transmitter of the pay station. This is done by reversal of the central office battery on answer by the called party, by means of a connector switch which operates a polar relay within the pay station instrument. At the end of the conversation the central office battery is restored to normal polarity, and a second polar relay in the pay station instrument restores the mechanism to its normal condition. Local calls to special service operators for information, repair service, universal emergency number (911) where provided, and to the toll operators do not require coin deposit to establish two-way conversation because the trunk equipment and/or connector groups which serve these functions do not reverse battery to the calling line.

3.33 Inward calls to a semipostpay station are accomplished in much the same manner as to any other business or residence subscriber. Normal battery polarity is applied to the pay station from the called party side of the connector.

3.34 Outward toll calls from a semipostpay telephone are accomplished by simply dialing a "0" (zero) level trunk. Combined line and recording trunks are not arranged to provide reverse battery supervision to the calling station when the operator answers. In this situation a clear transmission path is established without depositing a coin. The operator identifies the pay station by the audible tone which is momentarily impressed by the tone circuit in the line equipment circuitry and interrupted by the CLR trunk control relays. When the toll connection has been established, the operator may request the applicable coin deposit for the initial calling period. For operator supervision all coins deposited drop over signal gongs or tone transmitter activation switches in the pay station instrument and then pass directly into the coin receptacle. Coins thus deposited cannot be returned. Overtime charges may be collected in several ways; for example, (1) the operator may advise the calling party that overtime charges are about to begin and that she will recall the party after the call is completed to collect the additional charge for overtime, or (2) the operator may interrupt the conversation after the initial prepaid period and request an additional deposit for the overtime period which is about to begin. Toll trunks serving semipostpay stations may be provided with automatic re-ring features to preclude the necessity for manual operator recalls such as redialing the pay station to request additional overtime charges.

3.35 Incoming collect toll calls to a semipostpay telephone are handled in much the same manner as described in Paragraph 3.34. The operator identifies the called station as being a semipostpay by its telephone number assignment. (See Paragraph 3.31.)

3.36 Operating problems are often inherent with semipostpay service. For example, where dc line current does not meet the minimum requirement of 26 ma, local calls can be made without a coin deposit since inadequate line current precludes operation of the coin relay, therefore, the transmitter is not shunted. (See Paragraph 3.32). Another problem often results when more than one coin is used. In this situation the called party often abandons the call because the calling party is slow in depositing the coins required to establish two-way conversation.

4. CENTRAL OFFICE EQUIPMENT REQUIREMENTS

4.1 General: Central office equipment required to provide the pay station services discussed here is included in Table 1. However, specific information concerning several of these methods and their application is included for further clarification. Particular emphasis is placed upon operating features, special equipment requirements, and the application of full prepay service.

4.2 Conventional Prepay Service: With the conventional method of providing prepay service from a central office co-located with its attendant toll office, it is necessary to assign the pay stations to a segregated group of line equipment which is served by a dedicated group of line finders and local first selectors. The intra-office trunks connecting these switching elements are equipped with special relay groups commonly referred to as pay station trunk adapters. (See Figure 3). On local outgoing calls these relay groups are independent in controlling the coin collect and return functions of the pay station instrument. On toll calls automatic coin collect and manual return functions are accomplished by the toll operator utilizing auxiliary services of a separate coin type CLR trunk group interconnected with the local selector and switchboard coin control circuitry. The source of coin control voltage necessary to operate the coin mechanism of the pay station may consist of batteries or a dc to dc converter arranged to supply 110V dc of negative and positive potential with reference to ground. The application of positive or negative 110V dc to the line will operate the pay station instrument coin mechanism to collect or return coins.

4.21 Where prepay service is offered in multi-exchange areas, the operating methods described are applicable. However, due to the combined resistance of the local pay station line and inter-office trunk to a remote office, additional equipment may be required in order to provide sufficient operating current from the central office 110V dc source to insure reliable operation of the pay station coin mechanism. Special trunk circuits, commonly referred to as "coin-battery repeating" types, will receive coin control power from the local office and its attendant toll office. Other methods, such as carrier derived facilities, three-wire trunks, etc., may be used to extend operator supervision of coin functions between the remote office and the attendant toll office.

4.22 Under certain conditions it may be desirable from an operational and economic standpoint to extend prepay pay station service into another exchange area by utilizing pay station line equipment of the first office. If loop limits are not exceeded, special equipment would not be required in the second central office. However, in those instances where normal loop limits are exceeded, it is necessary to provide a pay station repeater at the remote office. (See Figure 2). The repeater will repeat dial pulses into the main office and impress local ringing current on the distant pay station in response to ringing current from the controlling office. It also actuates the coin mechanism by applying local coin battery in response to the application of coin battery at the central office.

4.3 Line Number Prepay Service: Line number prepay service may be used in certain unattended exchange areas where pay station service provided in adjacent areas is prepay. The term "Line Number Prepay" stems from the method which is utilized to provide coin control (collect and return functions) to the toll operator. It is a remote control type of operation, (See Figure 3), which allows the operator to utilize the switchboard position dial to control an auxiliary coin connector and relay mechanism at the remote central office attending the prepay pay station instrument. Bank terminals of the coin switch are connected to the line circuits and regular connector terminals assigned to the pay station. The final two digits, which are dialed by the operator to position the coin switch wipers, are the same as the final digits of the connector terminal assignment for the pay station. A third digit is required to condition the coin connector relay mechanism. For collection of coins, the digit "2" is generally assigned and for coin return the digit "7" is normally assigned. Access to the special coin control connector in the remote office is accomplished over a separate trunk. The trunk required for this purpose may be direct trunk assigned from the toll board to the coin switch, or a regular out-toll trunk may be used to dial an access level assigned to the coin switch. However, distant operators or customers must be denied access to this level. While the coin switch is necessary for the operator to return coins deposited in error (outward calls), to accomplish partial collections, and to collect or return coins on inward sent-collect calls, it is not required for most outward calls. As with other prepay modes of operation, the coins deposited are either collected or refunded automatically for completed calls, line busy, no answer, call to the operator, etc. To re-ring a pay station the terminal number must be dialed via the regular switch train.

4.4 Other Equipment Considerations: With several pay station services there are a number of universal equipment requirements and considerations which are common to all pay station modes of operation such as semipostpay and prepay. The most common of these are discussed below:

4.41 In order for attendant toll operators to identify inward calls, an audible tone must be applied to a control lead. The pay station tone is momentarily present when the operator answers the call. Pay station identification tone is applied to the pay station central office circuitry in one of several methods depending upon the type of pay station service. For semipostpay service the tone is applied to the sleeve lead of the line circuit equipment. Operator identification of pay stations on inward calls is accomplished by the telephone number assignment.

4.411 Previous practices have encouraged the utilization of the ninth level of first selectors for pay station line assignments. Since the adoption of the "universal emergency number 911", the ninth level number assignments for pay stations may no longer be available in some SxS offices, unless special equipment is used. Pay station number assignments should be restricted to the 9000 level wherever possible.

4.42 When interfacing offices utilizing combined groups of coin and non-coin lines with those having central automatic message accounting (CAMA) and Strowger automatic toll ticketing (SATT) equipment, it is necessary to deny these coin lines access to the SATT or CAMA trunk groups.

4.43 Extended area service (EAS) trunks require special treatment in order to provide a means of extending reverse battery (answer) supervision from the distant (traffic terminating) office where the pay station call originates.

5. LOOP CONSIDERATIONS

5.1 Special Considerations: While the design of outside plant facilities for pay station service is essentially the same as for regular subscriber loops, several factors must be given additional consideration. They are:

a) Minimum line current requirements which are required to ensure positive operation of the coin mechanism.

b) Increased attenuation (1000Hz) values of pay station instruments when compared with a Type "A" telephone instrument or equivalent.

c) Increased dc resistance values of pay station instruments as opposed to the 175-200 ohm value of regular telephone instruments.

Table 2, "Pay Station Instrument DC Resistance and Minimum Operating Current Values" and Table 3, "Electrical Values for System Design Calculations" indicates applicable engineering factors which must be considered in system design computations. These factors are based upon pay station instruments and associated central office equipment currently included in the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers." Table 4, "Typical Outside Plant Loop Limits for Pay Station Services" indicates maximum outside plant loop

limits which may be employed where transmission objectives and coin control functions have been considered. REA TE & CM-424, "Design of Two-Wire Subscriber Loop Plant" and REA TE & CM-426, "Subscriber Loop Computations, Design-By-Loss Method" should be employed, in the engineering and design of pay station loop plant. However, loop resistance and minimum current calculations may be required where loop limits would exceed those indicated in Table 4 and/or in instances where the utilization of voice frequency repeaters and/or minimum line current values appear questionable. An illustrative example which is included herein, indicates the basis for deriving minimum line current and transmission values.

5.2 Pay Station Long Line Adapters (PSLLA): Semipostpay pay station long line adapters are available for extending outside plant loop limits. This auxiliary equipment, which performs the normal functions of a long line adapter, extends the central office supervisory limits, provides an interface for the application of a booster battery supply, and repeats battery polarity reversals. Remote semipostpay long line adapters can also be employed to extend loop limits beyond those indicated in Table 4. However, installing and maintaining electromechanical relay devices in remote locations in costly and undesirable because of problems of accessibility, equipment shelters, power supplies, etc. Also involved is the possible need of a remotely located ringing source to extend ring trip limits.

5.3 Voice Frequency Repeaters: Transmission improvements may be made on long pay station loops by the application of voice frequency repeaters. They may be employed at the central office or at remote locations with any of the pay station services described herein. However, when loop loss calculations are made in accordance with REA TE & CM-426, "Subscriber Loop Computations, Design-By-Loss Method," the additional attenuation values indicated in Table 3 must be considered wherever applicable.

5.4 Local Free--Toll-Postpay Service: Where pay station service is required in remote locations and the loop limits previously defined are to be exceeded, pay station service may be provided on a local-free--toll postpay basis. This arrangement may be accomplished by modifying the pay station instrument so as to preclude shunting of the transmitter circuit when the called party answers. (See Paragraph 3.32). Semipostpay pay station instruments may be ordered with these modifications. However, for field modifications the manufacturer should be consulted for specific wiring options and strapping arrangements. With the pay station coin mechanism removed from the circuit, as provided by the above modification, transmission performance equivalent to that of a regular "500 Type" telephone instrument over a conventional metallic or carrier derived loop will be provided. Applications for this type service may be at conservation parks or at similar locations where semipublic service might normally be required.

5.5 Carrier Derived Facilities: Pay station service may be offered over carrier or radio multiplex facilities. The applicable pay station loop limitation is imposed by the distance limitation of the carrier itself and the manufacturers' recommended distance beyond the carrier terminal which

can be served by wire (usually 700-1200 ohms). The pay station instruments and varying methods of performing coin control functions must be compatible with carrier equipment; i.e., the carrier equipment must be capable of accepting central office supervisory signals and recreating them at the distant terminal. This requires special interface equipment between the central office and the carrier equipment and between the carrier equipment and pay station.

6. COIN-FREE DIAL TONE FIRST OPERATIONS

6.1 Coin-Free Services: As the term "coin-free dial tone first" implies, the implementation of these services will provide coin-free access and completion of calls to (1) assistance operators, (2) three-digit service numbers (3) the universally accepted emergency number (911) in localities where this usage has been established, and (4) the NPA information bureau (foreign or domestic). These services will also provide for routing of sent-paid station and special toll DDD calls to a TSP operator (or a TSPS operator where applicable) prior to depositing a coin(s). The operational features of coin-free services are outlined in the following table:

TYPE OF CALL	DIALING PROCEDURE	INITIAL COIN DEPOSIT	OPERATOR CALLED IN
Local	7D	Yes	N/A
Zone or Toll	7D or 10D	No	Yes
INWATS	10D	No	No
Service Code	3D	No	N/A
Emergency Number	911	No	N/A
Assistance	0	No	Yes
NPA Information	"1"* + Area Code + 555-1212	No	Yes

* The digit "1" is ommitted in some localities.

NOTES:

1. Prepay pay station instruments are currently available that do not require the application of 130 volts by an operator provided the central office has reverse battery supervision. Semi-postpay as well as prepay may be provided in this equipment by changing a circuit card.

2. Coin-Free services will also include the requirement that coins unnecessarily deposited in error be automatically returned.

3. Semipostpay pay station instruments currently provide limited coin-free service; e.g., service codes and operator access. These instruments have inherent capability for providing coin-free services.

6.2 Emergency Number (911) and Operator Assistance: Various requirements concerning the establishment of the universally accepted emergency number system and conversion of prepay pay station service for coin-free operation are being resolved. During the system design phase of a project a concerted effort should be made to coordinate the pay station operation mode with the emergency number requirements. Methods of converting to emergency number for specific equipment should be obtained from the respective manufacturer of that equipment.

7. PAY STATION INSTALLATIONS AND ENCLOSURES

7.1 Pay Station Usage: Pay station usage and anticipated revenues are, to a very large extent, dependent upon pay station locations or their exposure to the general public. Therefore, it is appropriate that pay stations be located in areas frequented by large segments of the general public including the handicapped. Detailed installation procedures are discussed in REA Standard PC-5, "Station Installations".

7.11 Recent laws have made it manditory to provide pay station service that is usable by the handicapped including those in wheelchairs, and those with hearing problems. These laws state that the pay station slots should be no greater than 48 inches from the floor. Under certain conditions the limit is 54 inches. The conditions are described in REA Standard PC-5, "Station Installations," under pay stations.

7.12 Another problem is pay stations that will not work with induction type hearing aids. These pay stations should be coded with a gray grommet at the point where the cord enters the handset. A blue grommet or no grommet indicates that the handset will work with hearing aids. All public pay stations should be equipped for the hard of hearing and be coded accordingly.

7.2 Locations: Enclosures should be installed only in locations frequented by a comparatively large portion of the public. Typical locations include shopping centers, amusement parks, fairgrounds, stadiums, playgrounds and parks, railroad and bus stations, air terminals, hotel lobbies, motels, tourist courts, drug stores, restaurants, service stations, municipal buildings, hospitals, and telephone offices.

7.21 Pay station and enclosure feasibility is discussed in Section 1520 of the Telephone Operations Manual.

7.3 Enclosures: The locations and installation of outdoor, indoor, and phone shelter enclosures should conform with all local ordinances. The exact location is important. A few feet one way or another may affect usage considerably. Parking space for users and adequate lighting should be available. Outdoor enclosures should be located where good surface drainage exists and where obstacles do not prevent easy access or present hazards to users, including the handicapped in wheelchairs. They should be accessible and should face away from prevailing winds.

7.31 Enclosures may be obtained equipped with 32-watt circle-line flourescent lighting arranged to provide booth, sign, and limited area lighting. Since power consumption of the 32-watt lamp is low, it may be left on continuously thereby eliminating the cost and maintenance of manual or door switches or automatic controls.

7.32 Outdoor enclosures should be mounted on substantial bases, adequately anchored against wind and vandalism. If the enclosures cannot be placed on an existing sidewalk a concrete base should be provided. For a booth type enclosure the base should be approximately six inches thick, four feet wide and five feet long. The extra length should be in front to provide an apron or step. (See Figure 4, Construction Drawing PM-26).

7.33 Indoor enclosures should be located where they are visible and accessible from the entrance to the premises and should be identified by means of a suitable "Telephone" sign. A sign should also be provided on the exterior of the building to indicate the availability of public telephone service. Lighting is usually by flourescent lamps which may be left on continuously.

7.34 Wall or shelf-type enclosures are particularly adaptable where floor space is limited or where the decor is to be matched. They should be securely mounted in a lighted area. They should be mounted at a height which will enable handicapped persons in wheelchairs to use conveniently. (See Figure 5).

7.4 Special Fittings: Enclosures should be equipped with permanently attached directories of the area served and, if contiguous to a large center, should also have a directory of the larger center.

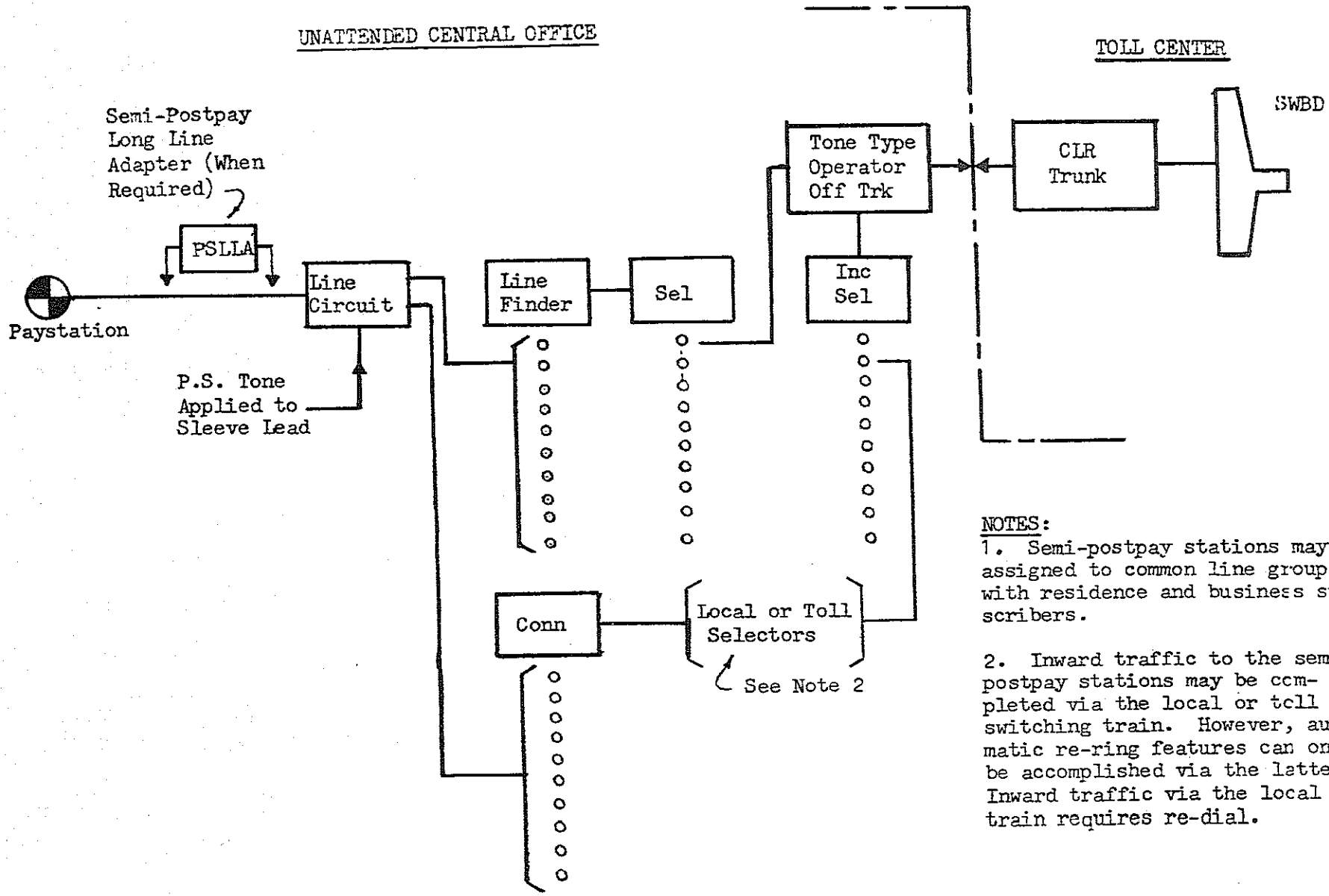
7.41 Cards should be prominently displayed giving local and long distance dialing instructions, coin deposit instructions, the extended service area, rates to nearby points, request to have correct change and advice "for further information consult the directory."

7.42 Many outdoor enclosures are designed to incorporate identifying signs as a part of them. Such signs are clearly visible in daylight and are illuminated by the built-in lighting at night. If not provided in the design, properly placed directing and identifying signs should be provided for indoor and outdoor pay stations. Signs of various materials, such as plastic, bronze, enameled steel and aluminum or combinations can be purchased in colors to match or contrast with enclosure or building exterior and interior finishes. Double faced signs are available for mounting in locations visible from two directions. Reflecting signs offer greater visibility for booth outdoor and indoor use.

7.43 The required size of signs and lettering is determined by the distance from which the lettering should be readable.

7.431 Directional indoor, and outdoor signs should use 2-inch letters for visibility up to 25 feet; 3-inch letters for visibility up to 50 feet; and 4-inch letters for visibility beyond 50 feet. Roadside signs to attract motorists should use 6 to 8-inch letters placed approximately at eye level, as close to the road as is consistent with safety and highway department restrictions. They should face approaching drivers and should be of the reflecting type.

7.432 Telephone enclosure masts in 12 and 13 foot heights are available for use where booths must be located away from taller structures. Such masts may be used for the drop wire and lighting service wire support as well as for area floor lighting fixtures.

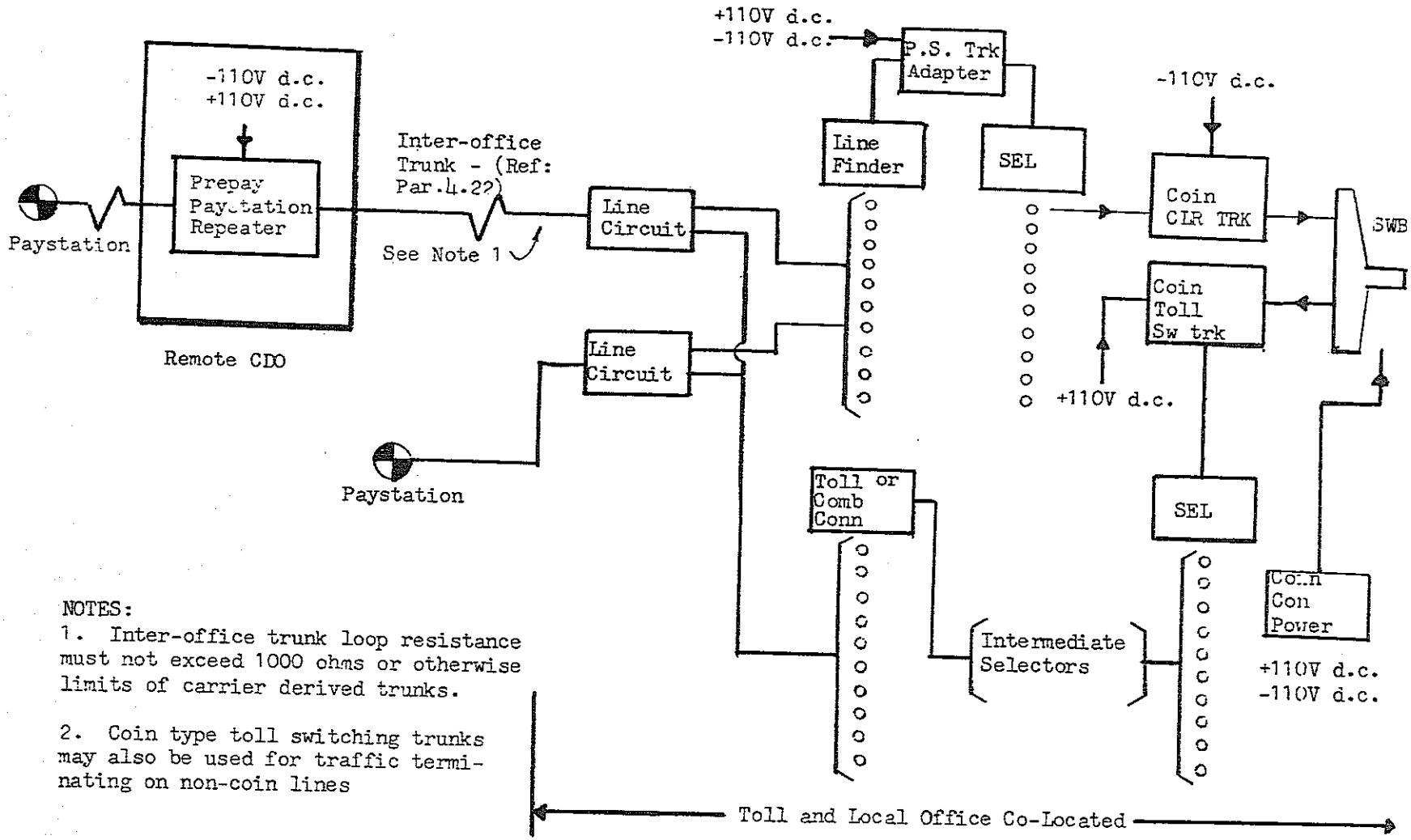


NOTES:

1. Semi-postpay stations may be assigned to common line groups with residence and business subscribers.

2. Inward traffic to the semi-postpay stations may be completed via the local or toll switching train. However, automatic re-ring features can only be accomplished via the latter. Inward traffic via the local train requires re-dial.

FIGURE 1 - TYPICAL SEMI-POSTPAY TELEPHONE EQUIPMENT ARRANGEMENT



NOTES:

1. Inter-office trunk loop resistance must not exceed 1000 ohms or otherwise limits of carrier derived trunks.

2. Coin type toll switching trunks may also be used for traffic terminating on non-coin lines

FIGURE 2 - TYPICAL (CONVENTIONAL) PREPAY TELEPHONE EQUIPMENT ARRANGEMENT FOR CO-LOCATED TOLL AND LOCAL OFFICE AND REMOTE CDO

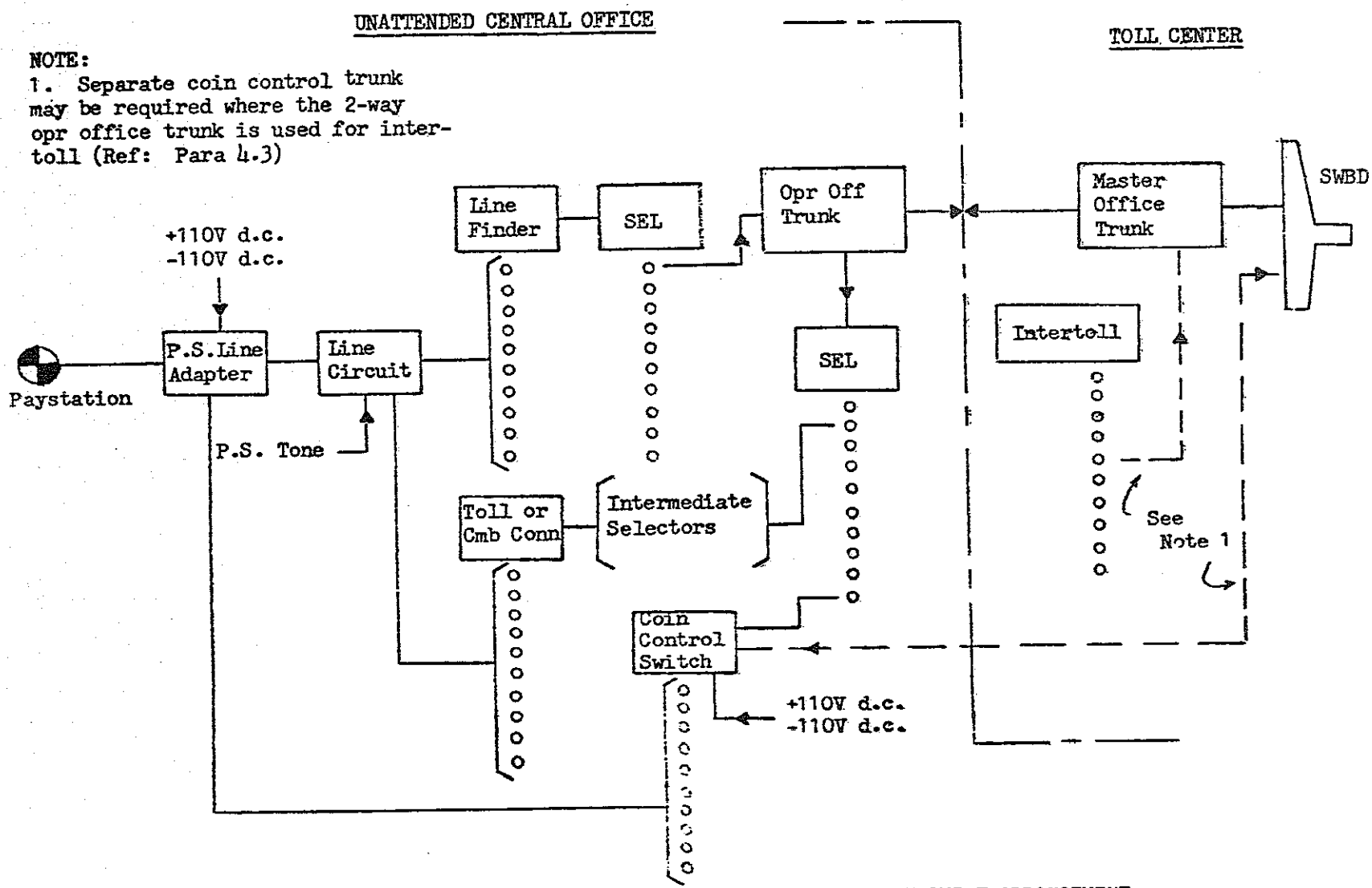
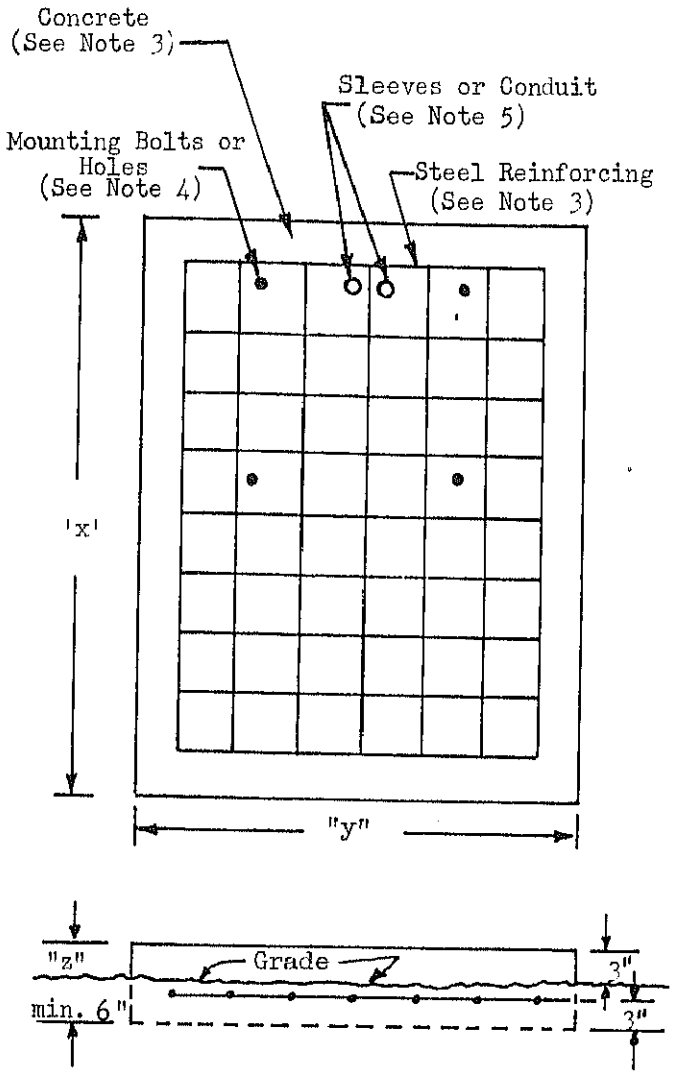


FIGURE 3 - TYPICAL LINE NUMBER PREPAY TELEPHONE EQUIPMENT ARRANGEMENT



NOTES:

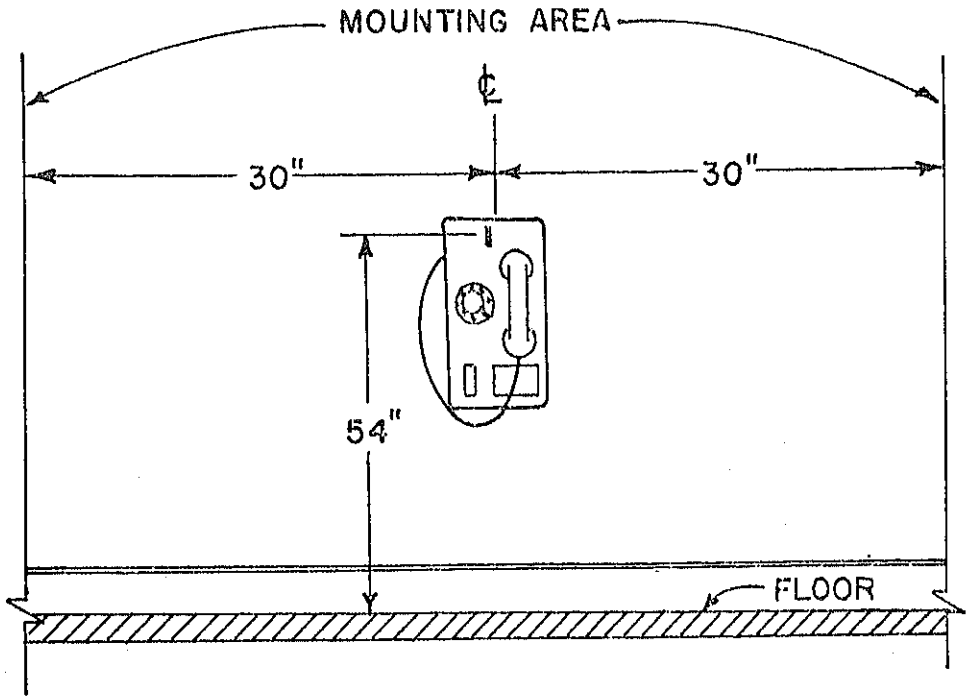
1. All materials for this unit may be purchased locally.
2. Dimensions "x", "y", and "z" to be specified by the Engineer.
3. Slabs may be precast or poured in placed. Concrete shall be 1: 2: 4: mix. Steel reinforcing shall be 6" x 6" - #10 wire mesh.
4. Provision shall be made for mounting the booth in accordance with the manufacturer's recommendation.
5. Where underground power and telephone entrances are employed, sleeves or conduit shall be placed in the slab for such service entrances.

DIMENSIONS	
"x"	
"y"	
"z" 6 min.	

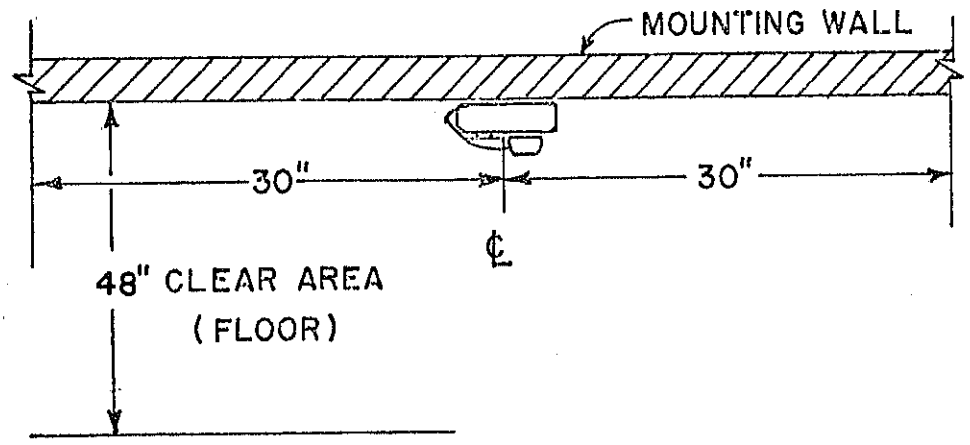
RURAL TELEPHONE CONSTRUCTION PRACTICES
Concrete Slab for Outside Paystation Booth

Scale: NTS		Nov. 2, 1954
		PM26

FIGURE: 4



FRONT VIEW



TOP VIEW

PAYSTATION CLEARANCES FOR HANDICAPPED PERSONS

FIGURE 5

MAIN CENTRAL OFFICE EQUIPMENT REQUIREMENTS	TYPE OF SERVICE: SEMI-POSTPAY	PREPAY: CONVENTIONAL	PREPAY: LINE NUMBER	REMARKS
Paystation identification tone	X		X[1]	1. Supplied with PSLA cct.
Line number assignment--preferably the 9000 group	X	X	X	
Rev. battery supervision from local conn.	X	X	X	
Regular subscriber line equipment	X		X	
Restriction from DDD, CMA, etc. access	X	X	X	
Extension of reverse battery answer supervision on EAS trunks	X	X	X	
Tone type operator office trunks	X[2]		X	2. Req'd in CDO where toll office is remotely located.
Dedicated linefinder, paystation adapter and selector group		X		
Dedicated coin connector group		X		
Special group of coin CLR trunks		X		
Positive and negative 110V d.c. source		X	X	
Dedicated trunk group - CDO to toll office		X		
Prepay paystation line adapter			X	
Coin control switch			X	
Separate coin control trunk			X[3]	3. Ref: Fig. 3

TABLE 1: PAYSTATION EQUIPMENT COMPARISON

PAY STATION TYPE	TRANSMISSION		COIN FUNCTIONS		REMARKS
	OUTGOING LOCAL	INCOMING LOCAL AND ALL TOLL	CURRENT	RESISTANCE	
	1	2	3	4	
	ohms	ohms	ma	ohms	
Semi-Postpay	200	450	26	450	
Prepay	200	200	Consult pay station manufacturer for loop limits exceeding those shown in Table 4		

NOTES:

1. These values are for single slot pay stations.

2. Columns 1 and 2 indicate maximum d.c. resistance values with pay station instrument in the talk condition; i.e., completed calls.

3. Columns 3 and 4 indicate maximum d.c. instrument resistance and minimum current values (requirements) with pay station instrument in the collect and/or refund condition as applicable.

4. Single slot pay stations have a variable rate features.

TABLE: 2: PAY STATION INSTRUMENT D.C. RESISTANCE AND MINIMUM OPERATING CURRENT VALUES

TABLE 3: ELECTRICAL VALUES FOR SYSTEM DESIGN CALCULATIONS

1. Central Office

   a. Normal central office battery - 48V d.c.

   b. Signalling limits - 1900 ohms

   c. Battery feed relay resistance:

(1)	Normal 48V d.c. battery (COB)	400 ohms
(2)	COB plus 24V d.c. booster battery	400 ohms
(3)	COB plus 48V d.c. booster battery	400 ohms
(4)	COB plus 60V d.c. booster battery	800 ohms

2. Attenuation (1000 Hz)

a.	Central office loss (COL)	0.5 db
b.	Pay station long line adapter (PSLLA)	0.4 db
c.	Voice frequency repeater LBO loss (LBOL)	0.5 db*
d.	Pay station instruments	
(1)	Semipostpay	3.0 db
(2)	Prepay	0.5 db

3. Coin Function-Maximum Resistance Values and Line Current Requirements

a.	Semipostpay	450 ohms - 26 ma

* This is taken into account in the Net VFR gain and will not actually show up in calculations.

TABLE 3: Continued

b. Prepay:

Due to the divergent origin of prepay paystation instruments used on the systems of REA Borrwers, calculation values have not been included. Manufacturers' technical bulletins should be consulted for applicable computation values where outside plant loop limits will exceed those indicated in Table 4.

NOTES:

a. For all transmission considerations, consult REA TE & CM-424, "Design of Two-Wire Subscriber Loop Plant" and REA TE & CM-426, "Subscriber Loop Computations, Design-by-Loss Method" as applicable.

NOTE:

1. Maximum loop limits are subject to transmission loss objectives (8 db) and coincidental line current values for coin mechanism operation as may be applicable. It should be noted that in many situations one or the other must be tailored to coincide with the prevalent factor which primarily limits loop design.

2. Assumes PSLLA is located in CDO.

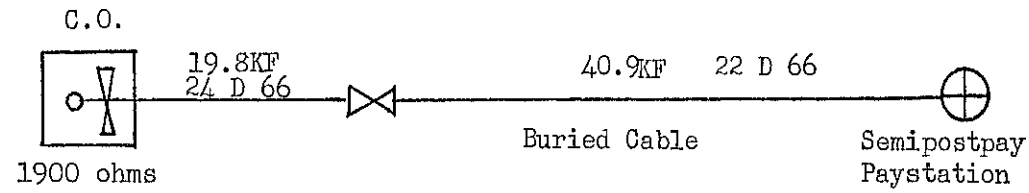
			CABLE FACILITY		
			24 D 66	22 D 66	19 D 66
SEMI-POSTPAY	48V min. COB	Ω / dB	1000 / 7.8	1000 / 7.9	1000 / 8.2
	48V COB, 24V BB, and PSLLA	Ω / dB	1400 / 9.9	1350 / 9.9	1300 / 10.0
	48V COB, 48V BB, PSLLA, and VFR	Ω / dB	2780 / 9.4	2780 / 9.7	2650 / 9.9
	51V min. COB, 60V BB, PSLLA, and VFR	Ω / dB	2900 / 10.0	2800 / 9.8	2650 / 9.9
PREPAY	48V min. COB	Ω / dB	1200 / 6.2	1200 / 6.3	1200 / 6.7
	PPR at CDO, PS Line Eq. at Toll Office		PS to CDO 1200 Ω CDO to Toll Bd. 1000 Ω TOTAL: 2200 Ω		
	PS Line Eq. at CDO, PPR at CDO		PS to CDO 1200 Ω CDO to Toll Bd. 1500 Ω TOTAL: 2700 Ω		

3. Figures in the above graph are for physical circuits. Paystation services over carrier or radio multiplex circuits are limited to system design. See paragraph 5.5.

TABLE 4: TYPICAL OUTSIDE PLANT LOOP LIMITS FOR PAYSTATION SERVICES

ILLUSTRATIVE EXAMPLE

Computations to provide semipostpay service to a subscriber located 11.3 miles from the central office. Facilities to be employed are 19.8KF of 24 D 66 cable and 40.9KF of 22 D 66 cable; 48V COB; 48V BB; PSLLA; and VFR (C.O. mounted).



1. Computation of minimum line current

a.	19.8KF 24 D 66	1053
b.	40.9KF 22 D 66	1378
c.	Voice frequency repeater	120
d.	Battery feed	400
e.	Paystation instrument	450
	TOTAL RESISTANCE:	3401

f. Line current $\frac{96V}{3400 \text{ ohms}}$ = 28 ma

2. Computation of 1000 Hz loss

a.	19.8KF 24 D 66	4.6
b.	40.9KF 22 D 66	6.1
c.	PSLLA	.4
d.	Paystation instrument	3.0
	SUB-TOTAL:	14.1
e.	VFR Net Gain*	-7.0
	TOTAL LOSS:	7.1

* This takes into account LBOL